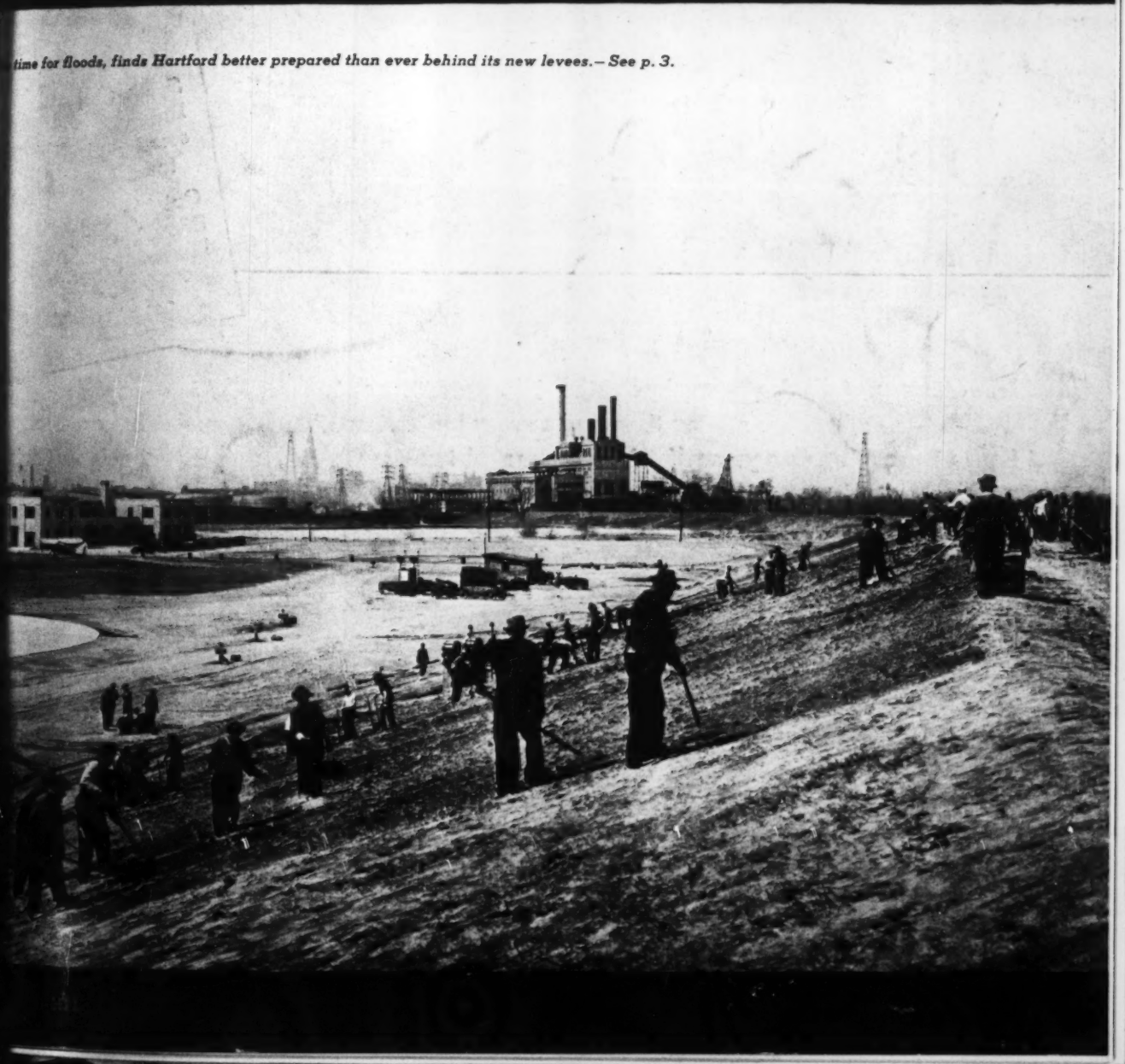
NEWS

time for floods, finds Hartford better prepared than ever behind its new levees.— See p. 3.



A FULL DAY'S WORK— and then some

Air Controls.
Special MICHIGAN-Built Chassis, engineered and manufactured for the job.
Quickly converts to Shovel, Clam, Dragline and Trench Hoe.
Full 1/2 yd. capacity.

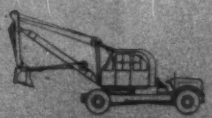
Besides doing a full day's work on the job, this complete MICHIGAN Truck Crane is saving time and money by towing other equipment between location Just figure the savings for yourself: 1.—Expense of two trucks ordinarily needed for towing tw "dependent" machines. 2.—Truck-type shovel eliminates trailer investment. 3.—Time and effo loading and unloading. 4.—Less equipment to maintain. 5.—Small jobs, ordinarily worked at loss, can be money-makers with a mobile MICHIGAN. Profitable applications of MICHIGA efficiency to YOUR operations may be found in Bulletin E30-205—write for it TODAY!

MICHIGAN POWER SHOVEL CO., Benton Harbor, Michigan, U. S. A.

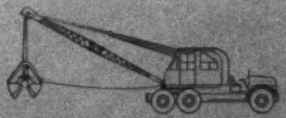
AIR CONTROLS

MICHIGAN

Truck Shovel *Specialists*



FOUR-WHEEL DRIVE



DUAL TANDEM DRIVE

SINGLE AXLE

CRAWLE

ENGINEERING NEWS-RECORD

NEWS

Volume 124 MARCH 21, 1940 Number 12

NOTES ON THE NEWS

Quick Surveys of Construction Events

▶ Because railroading no longer is an expanding industry relatively few young engineers are going into railway work and only a small number of those men who do, join the American Railway Engineering Association. As a result, the large majority of the membership of that organization is well past middle life. In an effort to correct that situation the A.R.E.A. plans now to establish the grade of junior member.

Despite unfavorable financial conditions, the railroads are continuing their research in the field of civil engineering. This year a modest appropriation for impact studies has been added, as will be noted in the A. R. E. A. report which appears on this page.

▶ Plans are advancing rapidly for the New York Battery-Brooklyn Tunnel. Excavation for the Brooklyn shaft is expected to be started by May 1, that on lower Manhattan two months later. The project is expected to require four years and to cost $80,000,000.

▶ In the past numerous restrictions on Canadian construction due to the European war have been cited. This week there is more optimistic note with announcement of a $20,000,000 explosives plant to be built in Ontario.

▶ When bids were opened last week by the Bureau of Reclamation for 1,500,000 bbl. of cement for the Central Valley work in California, bids were as low as 90¢ per bbl. for limited amounts or the lowest ever received by the Bureau. One bidder offered to supply the entire order for 97.5¢ per bbl.

▶ New York City's landfill methods of refuse disposal present no health hazards in the opinion of a group of public health experts reporting to the Bronx County supreme court.

Railway Engineering Association Seeks to Attract Younger Men

A plan to set up the grade of junior member is to be submitted to members for approval in the near future

INSTALLED AS NEW HEAD OF RAILWAY ENGINEERS GROUP

GEORGE STOKES FANNING, chief engineer of the Erie R. R., last week was installed as president of the American Railway Engineering Association at the association's annual meeting in Chicago. Following his graduation from the University of Michigan with a civil engineering degree, Fanning went to work with the Michigan Central R.R. In 1913 he joined the Erie as resident engineer, becoming chief engineer in 1929. He succeeds E. M. Hastings, as president of the A.R.E.A.

Members of the American Railway Engineering Association soon are to be asked to give their approval to a constitutional amendment setting up the grade of junior members. This announcement was made by E. M. Hastings, president, at the opening of the 41st annual convention of the association held in Chicago March 12–14. Hastings also stated that the association has reestablished its committee of the board that in years past cooperated with the engineering colleges in matters relating to the training of young men for the railway field.

Research work

President Hastings announced that the Association of American Railroads, of which the A.R.E.A. is a part, has appropriated $4,000 for the start of work on the association's long projected study of impact on bridges. Subsequently, C. H. Buford, vice president of the A.A.R., stated that the A.A.R. had appropriated nearly $100,000 for the research work of the A.R.E.A. This includes the rail research carried on jointly with the rail manufacturers, and the study of track stresses and rail joints.

J. B. Hanley, chairman of the Committee on Impact, stated that the appropriation would permit the committee to engage an engineer to correlate existing data.

Last fall the New York Central made a test installation of asphalt ballasted track in one of its high-speed tracks at Bryan, Ohio, where it had had trouble with heaving. The old ballast was removed to 8 in. below the bottoms of the ties and was replaced with new ballast treated with emulsified asphalt. This was sealed on top with a 2-in.

(*Continued on page 6*)

Large Explosives Plant To Be Built in Ontario

As a part of Canada's war activity a $20,000,000 explosives plant will be built at Parry Sound, Ont., by the Defense Industries, Ltd., for the production of TNT. Construction will start this spring with manufacture of the explosive expected to start next summer.

ENGINEERING NEWS-RECORD

Vol. 124 March 21, 1940 No. 12

Publication Office: 99-129 North Broadway, Albany, N. Y.

Editorial Offices: 330 West 42nd Street, New York

F. E. SCHMITT *and* WALDO G. BOWMAN, *Editors* A. E. PAXTON, *Manager*

Published every Thursday by McGraw-Hill Publishing Company, Inc., at 99-129 North Broadway, Albany, N. Y. James H. McGraw, Jr., President; Howard Ehrlich, Executive Vice-President; James H. McGraw, Honorary Chairman; B. R. Putnam, Treasurer; D. C. McGraw, Secretary. Subscription rates in the United States, Canada, Mexico, Central and South American countries, $5 a year; all other countries, $9, or 54 shillings a year. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

Copyright 1940, by McGraw-Hill Publishing Company, Inc. Cable address: McGRAWHILL.

Record Low Stages Reported On Mississippi

The Mississippi River Commission reports that late in January and early in February this year the Mississippi reached record low stages at several points.

The 1940 observations, subject to slight correction because of ice conditions, are as follows:

Location	Previous Low Date	Previous Low Gage, Ft.	1940 Low Date	1940 Low Gage, Ft.
St. Louis, Mo.	12/13/37	—5.5	1/16	—6.2
Fulton, Tenn.	10/27/39	—2.8	1/8	—3.4
Sunflower Ldg., Miss.	10/30/39	—5.7	1/30	—7.2
Mouth of White River, Ark.	10/31/39	—1.5	1/31	—2.4
Greenville, Miss.	10/31/39	—4.8	2/1	—5.9
Warfield Pt., Miss.	10/31/39	—4.9	2/1	—6.0
Lake Providence, La.	10/17/23 11/20/39	—5.8	2/2	—5.9
Vicksburg, Miss.	11/14/95	—6.5	2/2	—6.6
Natchez, Miss.	11/ 3/39	—1/3	2/3	—1.6
Chalmette, La.	12/ 1/24	2.0	1/26	1.7
West Pointe a la Hache, La.	11/ 7/30 12/13/39	—0.3	1/25	—1.0

Fewer Highway Employees In Pennsylvania

The Pennsylvania state department of highways has 667 fewer employees on its payroll this month than was the case a year ago, there now being 18,489 employees as compared to 19,156 as of last year.

Funds Needed in Ohio For Arterial Highways

There will be no rebuilding or modernization of Ohio's obsolete arterial highways until the state supplies more funds for the highway department, Robert S. Beightler, state highway director, stated in speaking at Canton, Ohio, Mar. 11 before a three-day meeting of 500 highway employees. The meeting was sponsored by the state highway department, the Canton Chamber of Commerce, and the Canton Regional Society of Professional Engineers and Surveyors.

"Obsolete and inadequate highways have become the most serious problem of my department. The state receives only 34 per cent of the total revenue from motor vehicle taxes, and this amount is not adequate for the improvement and modernizing of roads," Beightler asserted.

• • •

Suit Would Prevent Cincinnati Floodwall Work

Eight Cincinnati, Ohio, business organizations have filed suit in the common pleas court of that city to prevent authorities of the city of Cincinnati from entering into an agreement with the federal government for construction of a floodwall and from issuing any of the $5,000,000 bonds voted in 1937 for flood prevention.

SCRAPER BRIGADE ROLLS ACROSS THE PRAIRIES TO ATTACK CADDOA DAM

WESTERN CONTRACTING CORP., of Sioux City, Ia., contractor on the relocation of the Santa Fe RR. at Caddoa Dam, pulled a new stunt in scraper transportation early in March by moving ten new Koehring wheeler scrapers under their own power from the Parson assembly plant at Newton, Ia., to the job at Lamar, Colo. The wheelercade, as Koehring called it, moved on 60 pneumatic tires valued at $20,000, and made the 800-mile overland trip at a speed of 18 mph. without a hitch and causing no interference with highway traffic, as the scraper units, though weighing 45,000 lb. each, are only 8 ft. wide. The tractors are powered by General Motors 107-hp. diesel engines.

More than 3,500,000 cu.yd. of material will be moved for the 22 mi. of track relocation around Caddoa Dam and reservoir; some fills will be 75 ft. high. The contractor plans to use a fleet of nine scrapers and two pusher tractors in three 8-hr. shifts per day, reserving one scraper and a pusher for replacement when servicing the fleet.

Irrigation District Held Taxable in Arizona

A law defining irrigation districts as municipalities entitled to all municipal exemptions, including certain taxes, was declared unconstitutional Mar. 4 by the Arizona State Supreme Court. The law was enacted several years ago to aid irrigation work but the court held that the state constitution gives the legislature insufficient power to pass such a law.

The ruling was handed down in a case involving 40 acres of land in Yuma County claimed by the Yuma Irrigation District but sought by the State of Arizona and Yuma County for taxes.

• • •

Cook County Protests Against Chicago Dump

Utilizing an interim zoning ordinance Cook County has protested against Chicago establishing a garbage dump in an unincorporated area southwest of Park Ridge. Residents of this village, which itself has an ordinance controlling nuisances for a mile outside of its boundary, are protesting vigorously although Chicago officials indicate that the area would be used as a sanitary fill and the refuse dumped would contain only 12 to 15 per cent of garbage.

Cook County is following the action of several neighboring counties in the establishment of a zoning ordinance on which hearings are being held in each township. It will not be ready for adoption for several weeks. To cover the interval until adoption the interim ordinance is in force. It calls for (1) permits for all new uses of land or new buildings; (2) restriction of a new business or use except within 200 ft. of a like business or use; (3) reference of refusal by the permit-granting agency to the zoning commission which has under consideration the proposed final ordinance.

Robert Kingery, director, Chicago Regional Planning Association, is chairman of the Cook County zoning commission. He has been largely instrumental in putting county zoning into DuPage County 4 years ago, Kane 2 years ago, Lake and Winnebago last year and Kendall County in January this year. Will County has had the matter under consideration for 3 years.

HARTFORD HAS GREATLY IMPROVED ITS FLOOD DEFENSES

MARCH in Hartford recalls the disastrous Connecticut River flood of 1936 in which 25 per cent of the city was under water. As its citizens speculate on high water this year, they can feel more secure than at any time in the city's history, for the Army Engineers have made rapid progress on the new protective dike system, including raising some of the old dikes. The above view shows dressing and seeding operations on the land slope of the levee that protects the south part of the city, in which the airport and the sewage treatment plant are located.

Tangible proof of the effectiveness of the dikes around the south half of the city was given in the hurricane flood of September, 1938, whose crest was only 2.2 ft. below the 1936 high water but which flooded only 13 per cent of the city. During the past year the north dike has been substantially completed and now work is beginning on the central dike tying the north and south dike together. This new work, now in plan and specification stage, will also include a pressure conduit to confine the Park River which always backs up into the business district with resultant damage. Estimated to cost some $4,000,000, this new work will get under way soon with two or three years needed for completion.

Record Low Bids Posted for Cement

Central Valley work in California yields a 90¢ per bbl. figure

Bids received last week on 1,500,000 bbl. of low-heat cement for Central Valley reached a low of 90c per bbl. This indicates that the break in West Coast cement prices, which was caused last year by the organization of the Permanente Corp., is continuing. When bids were asked last year for 5,800,000 bbl. for Shasta Dam, the newly organized Permanente offered to furnish the cement at $1.19 if allowed an extension of time to build a mill.

This compared with $1.37 paid in 1938 for cement for Coulee and $1.46 in 1934 at Boulder. The Permanente bid was accepted. On the present bid Permanente offered the lowest—97.75c—for the full amount. But several companies bid lower on smaller amounts. The bids are the lowest ever received on a Reclamation project.

The Riverside Cement Co. and the California Portland Cement Co., submitted a joint bid to supply the full amount at $1.10 per bbl. from Colton and $1.0480368 from Crestmore on a delivery schedule of 3,000 bbl. a day and 75,000 bbl. monthly. The Permanente Corp. bid 97.75c per bbl. on the full amount, with no delivery schedule. Monolith Portland Cement Co. bid $1.22 less 10 per cent in 30 days on 1,000,000 bbl., to be delivered 3,000 bbl. daily and 80,000 bbl. monthly. Monolith bid on lesser quantities, all with the 10 per cent 30-day discount, as follows: 305,000 bbl., $1.04, delivery in April, May and June; 350,000 bbl., $1.15 for delivery April-November; 125,000 bbl., $1.27 for delivery July-November; 395,000 bbl., $1.22 for delivery December 1940-May 1941. The Calaveras Cement Co. bid 90c, with no discount, on 150,000 bbl., to be delivered 2,250 bbl. a day and 53,000 bbl. a month from Kentucky House. The Pacific Portland Cement Co. bid $1 per bbl. less 10 per cent in 10 days for 330,000 bbl. to be delivered 1,200 daily and 30,000 monthly from Redwood Harbor. The Beaver Portland Cement Co. bid $1.65 with no discount on a maximum of 165,000 bbl. to be delivered 600 daily and 14,000 monthly from Gold Hill, Oregon. The Santa Cruz Portland Cement Co. bid $1.15 per bbl. with no discount on a maximum of 300,000 bbl. to be delivered 1,000 daily and 25,000 monthly. The Yosemite Portland Cement Co. bid $1.0161024 with no discount on a maximum of 350,000 bbl. to be delivered 1,250 daily and 31,250 monthly from Merced.

Trylon Gets New C

PREPARATORY to opening the New York World's Fair for the 1940 season, the 610-ft. Trylon of the theme center is getting a new 50,000 sq. ft. coat of exterior grade ½-in. 5-ply Douglas fir plywood to replace the old covering of magnesite stucco on gypsum board backing.

The new material will extend from the 75-ft. base section of fire-resistant construction to 124 ft. from the top, this upper portion of the Trylon originally having been covered with a ⅜-in. steel plate. The plywood material is supplied in 8- and 9-ft. lengths and 32 in. wide to fit the 16-in. nailer spacing on the framework.

With the old magnesite coating severe condensation took place on the sheathing, and continued even after installation of three louvers for induced circulation. As a result the gypsum board lost its nail holding power and late last year large areas were ripped off by high winds.

The work is being done by the J. A. J. Construction Co., Brooklyn, N. Y., of which John A. F. Johnson is head and Robert V. Acampora construction manager. A. J. Dillon, project engineer, and John P. McInerney, construction superintendent, represent the New York World's Fair, Inc.

Coat for 1940 Fair

ERECTION of the plywood, starting at the top, is done on scaffolding supported by steel brackets equipped with hook bolts for fastening to the vertical I-section purlins. The sheathing is hoisted inside the Trylon by hand ropes to temporary platforms supported on the steel framework and then passed out to the carpenters. The contractor has sufficient brackets for three scaffolds to go completely around the structure, thus permitting the carpenters to work on two levels while ironworkers are moving the brackets down for the third scaffold.

THE BRACKET just removed will be lowered with a rope for erection of the third scaffold, the distance between scaffolds being about 8 ft. At top of picture may be seen a bracket still in place.

EACH PLYWOOD SHEET is buttered along the edges with a caulking compound and then nailed in place. A workman then seals the joints, before application of the first coat of rubber-base paint.

A.R.E.A. Meeting

(Continued from p. 1)

seal coat of ¾-in. stone, similarly treated, over which asphalt treated sand was swept to fill the voids. The treatment required 6.6 gal. of emulsified asphalt per foot of track. Reporting on this test installation of asphalt treated ballast, the track committee stated that it has been in service five months and has eliminated all trouble with heaving on that track although adjoining tracks have heaved.

The roadway committee submitted a valuable paper on the size of waterway openings for culverts which includes a graphical tabulation of flood run-off records in relation to run-off formulas, and a graph showing the relation of such formulas to drainage areas.

Corrosion in tunnels

The track committee reported on its study of corrosion of rails and fastenings in tunnels. Protective coatings of many kinds have been tried without much success. There now is under study a modified cathodic protection in the form of a zinc spray on the sides of the head of rail which protects the iron cathodically some distance from the sprayed metal. Favorable results have been obtained so far. Wrought iron and galvanized spikes are being tried and consideration is being given to rolling special rail sections for use in tunnels.

On the matter of corrosion of track and bridge steel due to brine drippings, the track committee finds that laboratory tests indicate that the use of sodium dichromate and soda ash as an inhibitor will be of material help in preventing such corrosion. Field tests are to be undertaken this year to find the best way in which to add the inhibitor to brine drippings and to see how field results check with the laboratory.

Rail studies

Encouraging results in eliminating rail failures due to transverse fissures were reported by the rail committee and by H. F. Moore, head of the rail research work at the University of Illinois. There have been no failures due to transverse fissures in rails manufactured by the controlled cooling methods recommended by the association, and none in the Brunorized rails (a similar process) since that process was modified in April, 1938. Studies have shown wide variations in temperature in the cooling boxes, variations that may result in too fast cooling of some rails. This has been remedied by insulating the boxes. Moore stated that his studies have shown that it is not necessary to hold rails in the boxes until they cool down to 300 deg. F., as was first believed to be necessary, that the length of time in the box at temperatures above 300 deg. F. is more important than the temperature at which rapid cooling begins.

During the year, laboratory and field tests to determine the best methods of reducing batter of rail ends have been continued, as have the tests on welded rail joints. These latter tests, Moore said, show that gas pressure welds and electric pressure welds show strengths approaching that of the rail itself. Moore cautioned against drawing definite conclusions at this stage of the work.

Reporting on the work of the special committee on stresses in railroad track (a joint committee of the A.R.E.A., A.A.R. and Am. Soc. C.E.) A. N. Talbot stated that the service tests on joint bars that have been underway now for three years show the value of end hardening of rails. Observations are being continued on long stretches of continuously welded rail. This rail continues to make a good showing. There were no failures in the stretch on the D.&H. near Schenectady last year and few in the whole period.

Pipe costs

Information for use in comparing the service cost of some of the newer types of pipe was given by the committee on water service. The same committee also reported on the application of molecularly dehydrated phosphates for preventing deposits in pipe lines.

Modern vibrators for concrete work were described briefly by the committee on work equipment together with comment as to the effect of frequency of vibration and methods of application. Another valuable report by this committee relates to sand-blasting equipment.

Iron and steel structures

New specifications for structural steel and iron for buildings, submitted by the committee on buildings, were adopted for publication in the manual of the association. Numerous minor changes in specifications for steel railway bridges also were approved.

The committee on iron and steel structure drew attention to a monograph on Design of Connection Angles for Stringers of Railway Bridges, by W. M. Wilson, research professor of structural engineering, University of Illinois, that was published last year in Bulletin 412 of the association. Included with the committee's report was a study of 40 failures in bridge details having relatively light dead loads but frequent repetitions of live loads.

J. F. Leonard, engineer of bridges of the Pennsylvania, urged the committee to consider reporting on the substitution of bent plates for angles, on cold driven rivets and on flame cleaning.

Concrete structures

Speaking for the committee on masonry, M. Hirschthal, stated that the final report of the joint committee on concrete and reinforced concrete is now in the hands of the printer and will be published at the time of the A.S.T.M. meeting in June.

The masonry committee added new sections to its specifications for foundations, the new sections being: VI, Types of Piles; VII, Driving; VIII, Spacing of Piles. Further specifications for piles were added by the committee on wood bridges, that committee submitting for the manual a new specification for driving wood piles. The committee uses the *Engineering News* formula for determining loading of piles, but recommends that test piles be driven wherever practical.

New officers

George S. Fanning, chief engineer of the Erie R. R. was elected president of the association and H. R. Clarke, engineer maintenance-of-way, Chicago, Burlington & Quincy R.R. was elected vice president,

New association directors are: A. A. Miller, Missouri Pacific; F. R. Judd, Illinois Central; G. P. Palmer, B. & O.; R. A. Van Ness, Santa Fe; H. F. Brown, New Haven, R. R.; W. M. Wilson, University of Illinois; C. P. Richardson, Rock Island; B. R. Kulp, Chicago & Northwestern, and Armstrong Chinn, Alton, R. R.

Special events of the convention were an address on "The Outlook for Railroad Legislation," by R. V. Fletcher, vice president, Association of American Railroads, and a discussion of Chicago's rapid transit problem and an outline of the city's subway program presented by Philip Harrington, commissioner, department of subways and superhighway, Chicago, at the Western Railway Club dinner.

Railway show

The National Railway Appliances Association held its 29th annual exhibition at the International Amphitheatre concurrently with the meeting of the A.R.E.A. Over 80 manufacturers exhibited equipment of interest to engineers and railway maintenance-of-way officials. New officers elected were R. B. Fisher, Buda Co., president; J. S. Hutchins, American Brake Shoe & Foundry Co., vice president; L. Adams, Oxweld Railroad Service Co., and Clarence L. Mellor, Barco Manufacturing Co., directors.

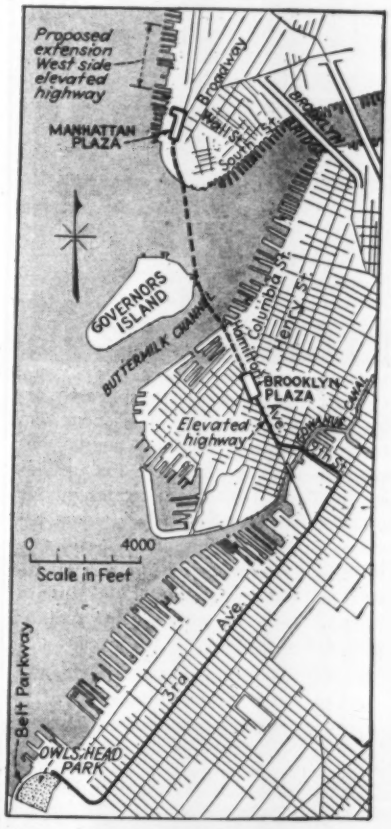
New York's Brooklyn-Battery Tunnel

Quick start promised now that money is available

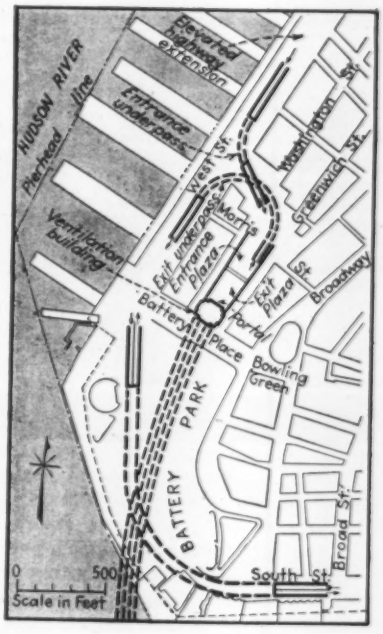
Since the announcement last week that financing had been arranged for a twin tube vehicular tunnel in New York City from the Battery in Manhattan to Hamilton Ave. in Brooklyn ($57,000,000 from the RFC, $12,000,000 from the city for the Manhattan connections and $12,000,000 from the Triborough Bridge Authority for the Brooklyn connections) plans have advanced rapidly for an early start on construction. According to Ole Singstad, chief engineer, New York City Tunnel Authority, excavation at the Brooklyn shaft should get under way about May 1; the Battery shaft work would begin two months later, and the Governors Island shaft last. The tunnel to be ready in four years.

Each of the tunnels will consist of a circular cast iron shell, lined with concrete, similar to the Holland, Lincoln and Queens-Midtown tunnels. Roadway width will be 21 ft., with annual capacity set at 16,000,000 vehicles. Present traffic through the Holland Tunnel is about 13,500,000 vehicles at a 50c toll. The Battery Tunnel will charge 25c.

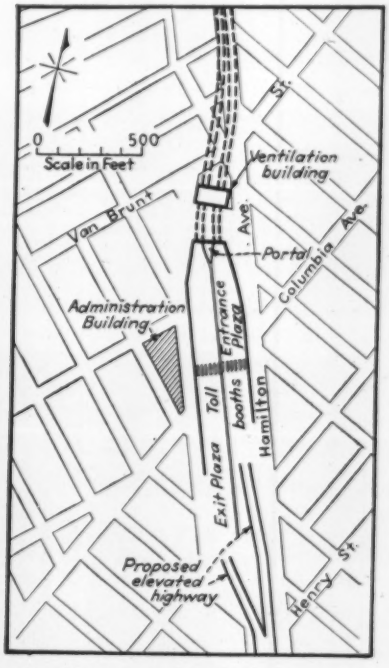
Except for about 200 ft. at the Manhattan end and 1,000 ft. at the Brooklyn end, all of the subaqueous part of the tunnel, some 5,000 ft., will be in rock. Maximum depth below the water surface is 115 ft. at the Governors Island shaft.



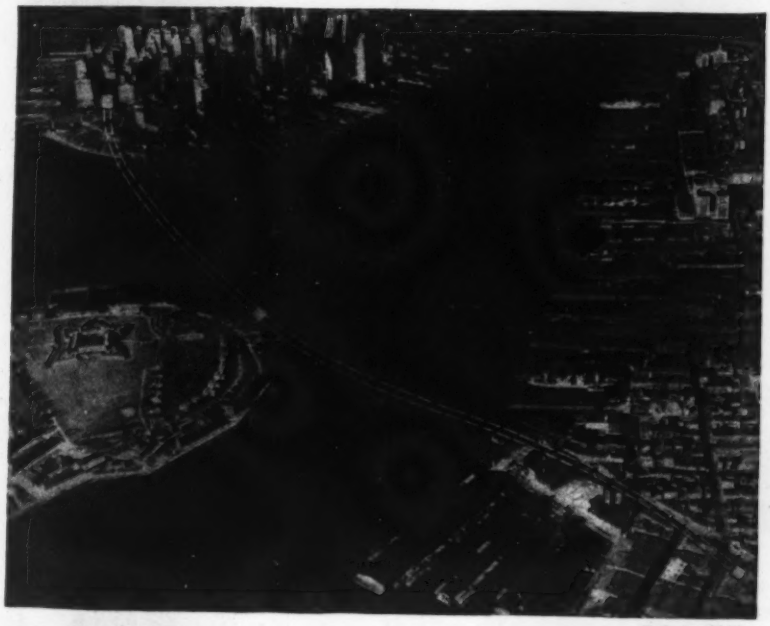
Tunnel alignment and approach roads.



Manhattan terminal and connections.



Brooklyn terminal and connections.



Rudy Arnold Photo

White squares are the construction shafts, later to become the ventilation buildings.

Accompanying views show the proposed plaza layouts. The Manhattan ventilation building will be made to appear as one of the row of buildings that front on Battery Park. At the Manhattan end traffic will not only be connected to the West Side Elevated Highway, which will be extended 2,500 ft. southward from its present terminus at Duane St., but it will have access, through a tunnel around the rim of Battery Park, to South St., down which it is proposed to extend the East River Drive.

The Brooklyn connection from the plaza south to the Belt Parkway at Owls Head Park, nearly 4 mi., will be built by the Triborough Bridge Authority.

Stanley C. Monroe, assistant engineer of the U. S. Public Health Service, is in charge of the "floating laboratory" specially designed for stream pollution studies in connection with the Ohio River survey. Prior to his becoming a "sea-going" sanitary engineer last January, Monroe spent ten years serving as assistant engineer and chemist of the Akron, Ohio sewage treatment plant.

Well situated in a steam-heated office and backed up by an efficient secretary, **Stephen Collins** points out something about the steel tied arches in the Rock Island, Ill. bridge to his superior **William Schmidt,** resident engineer for the consultants Ash-Howard-Needles & Tammen. Collins is a graduate of the University of Illinois. Schmidt took his work at Iowa State, graduating in 1909.

The mosquito is seemingly ubiquitous, and so is **J. L. Robertson,** senior sanitary engineer of the U. S. Public Health Service, who supervises control activities in 17 states. Recently he was placed in charge of the Memphis district office to succeed Col. J. A. LePrince, who has retired from the service. Robertson was formerly in charge of mosquito control in the District of Columbia.

MEN AT WORK

Work on the permanent government camp at Green Mountain, Colo., for those connected with the Bureau of Reclamation's Colorado-Big Thompson $44,000,000 irrigation and power project, gets the approval of **Porter J. Preston,** supervising engineer, and **Col. S. F. Crecelius,** construction engineer for Green Mountain Dam. Preston, an authority on irrigation, has been at work on the project for several years. Col. Crecelius was transferred from the Cabollo Dam project on the Rio Grande. The Colorado project will provide 310,000 acre-ft. for land already under irrigation.

Milo Ohr, engineering assistant to Peter Kammeraad, director of public service at Grand Rapids, Mich., **William Quinsey,** assistant engineer in charge of the 16-mg Livingston Park Reservoir at Grand Rapids, and **Emil R. Rutts,** superintendent of construction for Pearson & Co., contractors of Benton Harbor, Mich., building the reservoir, are pictured with plywood forms for an outside wall as a background. Speed is the outstanding feature of this job, 60 per cent of the project being completed in 60 days. The project is part of the work of constructing a 30-mile conduit to bring Lake Michigan water to Grand Rapids.

MEN AND JOBS

JOHN A. HICKEY, general contractor of Cleveland, has been named director of the utilities department of the city of Cleveland. Hickey has spent 33 years in the construction field, during the past 10 years having been president of J. A. Hickey, Inc., general contractors of Cleveland.

BRUCE D. JOHNSTON, assistant director of the Fritz Engineering Laboratory at Lehigh University, is giving a series of lectures on structural theory for practicing engineers, the group meeting once each week for 15 weeks.

JAY C. FORD, construction engineer, has been appointed one of the operators for the new Des Moines, Iowa sewage treatment plant. CITY ENGINEER JOHN TIPPEE will be in charge of operations.

SUMNER C. WILLIS, for 17 years superintendent of construction with the United Engineers & Constructors, Inc., Philadelphia, has resigned to join the H. K. Ferguson Co., industrial engineers and builders of Cleveland and New York. Willis was graduated from the Massachusetts Institute of Technology in 1911 and for ten years served as field engineer on construction with Stone & Webster.

RALPH L. BECKEL, of Bethlehem, Pa., has been named bridge designer for the Pennsylvania department of highways. CLARENCE M. BENZ, of Norristown, has resigned as project engineer with that organization.

W. J. NEWMAN, old-time contractor of Chicago, announces the incorporation of the Newman Caisson Co. with himself as president, EDWARD W. BYERS, vice-president and general manager, and HARRY D. FRUEAUFF, JR., secretary and treasurer. The work of the company will be restricted to caisson work, underpining, tunneling and special foundations.

HERBERT S. SISSON, formerly New York state commissioner of highways, has been appointed executive secretary of the New York state highway chapter of the Associated General Contractors. His headquarters will be in Albany.

LUTHER S. OAKES, Minneapolis civil engineer, has been appointed a member of the board of overseers of the Thayer school of civil engineering at Dartmouth, the school from which he graduated with the class of 1900.

D. C. MILLER, formerly city engineer at Helena, Ark., is now a member of the Memphis, Tenn., city commission. Miller worked for a time as a member of the Memphis engineering department constructing the north Memphis levee.

A. P. ROLLINS and T. C. FORREST, JR., have organized the Rollins & Forrest firm for consulting work, opening offices in Dallas, Tex. Rollins, a graduate of Texas A. & M. College in 1906, for a number of years was employed by Nagle-Witt-Rollins & Gilchrist. At one time he was also a member of the firm of Rollins & Clinger. Forrest worked for a time in Dallas in private practice and in 1927 joined the firm of Myers, Noyes & Forrest. He served as consulting engineer to the Texas Centennial Exposition, also as consultant to the New York World's Fair.

HARRY D. BUSHEY, for several years assistant city engineer at Barberton, Ohio, has been made city engineer to succeed HARRY ALCORN, who is retiring on pension.

PERCY BLOXAM, engineer of Raleigh, N. C., has been appointed city manager of Roxboro, N. C., to succeed JAMES C. HARRIS, who has resigned to become city manager of Hazard, Ky. For the past two years Bloxam has been general superintendent in the office of C. C. McGinnis, WPA administrator for the State of North Carolina. He also served for a time as city engineer of Salisbury, N. C., at the same time acting as consulting engineer for the city of Spencer, N. C.

EUGENE HOWELL, former assistant state sanitary engineer for Colorado, is now acting as engineer in charge of all public health engineering in eleven Western states and Alaska for the Farm Security Administration.

JOHN J. LYNCH, for the past six years associated with WPA operations in Philadelphia, has been appointed to succeed HARRY R. HALLORAN as work projects administrator for Philadelphia County, Pa. From 1917 until 1933, Lynch engaged in contracting work. Halloran, a graduate of the University of Pennsylvania, has become chief engineer of the Leo Butler Co., Silver Springs, Md.

SAMUEL R. REED, of Waynesburg, Pa., is now engineer with the Pennsylvania department of forest and waters. GEORGE B. ROSS of Pittsburgh has resigned as engineer with the same department.

JOHN J. ROCKEFELLER, engineer with the PWA and a graduate of Rensselaer Polytechnic Institute with the class of 1923, has been appointed promotion engineer for the Clay Sewer Pipe Association, Inc., Pittsburgh, Pa., his offices to be located in New York. Prior to joining the PWA, Rockefeller worked as supervising engineer with the Foundation Co., New York City, and the New York consulting firm of Moran, Proctor and Freeman.

WALTER S. FADDIS, president of the Building Trades Employers' Association for the past 18 years, has retired. He is also resigning as president of Cauldwell-Wingate Co., New York City. Faddis entered the construction field in 1870 with his father at Ft. Assiniboin, Mont. ROBERT C. WHITING, vice-president of the George A. Fuller Co., is succeeding Faddis.

FRED COBB, of Norman, Okla., is now working as special consulting engineer for the City of Oklahoma City in conjunction with a large WPA street improvement program. Cobb was formerly WPA paving engineer for the Oklahoma state office. Previous to that he was city engineer of Norman.

CHARLES H. MITCHELL, consulting engineer and dean of the faculty of applied science and engineering at the University of Toronto, has new duties as director of Canada Steamship Lines Limited.

HOWARD E. SMITH, for many years district engineer of the New York state department of public works at Rochester, has retired after more than 30 years of state service.

CHARLES M. HORNER, 61, vice president and general manager of the East St. Louis (Ill.) and Interurban Water Co., retired early this month following 31 years of active service for the utility. C. M. ROSS of Peoria, Ill., has succeeded Horner as head of the company. Horner was made superintendent in 1914, becoming vice president and general manager in 1928.

PAUL WHITE, formerly with the Bureau of Reclamation at Denver, has new duties as irrigation engineer with the Indian Service. His headquarters will be at Los Angeles.

NOCHOLAS J. MARSCH, JR., a graduate of Armour Institute of Technology, has taken employment with the Toledo, Peoria, and Western R. R., Peoria, Ill.

HENRY H. FERGUSON, project engineer for the PWA on the Grand River project at Vinita, Okla., has been placed on furlough. LEONARD MARX, of the PWA power division at Washington, D. C., has taken over his old duties.

MEETINGS

MIDWEST POWER CONFERENCE, Palmer House, Chicago, April 9-10.

INTERNATIONAL ACETYLENE ASSOCIATION, annual convention, Milwaukee, Wis., April 10-12.

AMERICAN SOCIETY OF CIVIL ENGINEERS, spring meeting, Kansas City, Mo., April 17-19.

AMERICAN WATER WORKS ASSOCIATION, Kansas City, Mo., April 21-25.

REGIONAL AND LOCAL

SOCIETY OF AUTOMOTIVE ENGINEERS, Metropolitan Section, Symposium on "Rebuilding Our Cities for Traffic Safety and Efficiency," Hotel New Yorker, New York City, March 21.

AMERICAN WATER WORKS ASSOCIATION, Canadian section, annual convention, March 27-29, London, Ont.

NEW YORK STATE Association of Highway Engineers, annual convention, Rochester, N. Y., March 28-30.

MICHIGAN ENGINEERING SOCIETY, annual convention, Cranbrook, Mich., Mar. 28-30.

AMERICAN WATER WORKS ASSOCIATION, Montana Section, annual convention, Miles City, Apr. 2–6.

AMERICAN WATER WORKS ASSOCIATION, Indiana Section, Indianapolis, Ind., Apr. 4-5.

WESTERN ASSOCIATION OF STATE HIGHWAY OFFICIALS, annual convention, Sante Fe, N. M., Apr. 17-20.

ARIZONA SEWAGE AND WATER WORKS ASSOCIATION, annual convention, Tucson, Ariz., April 20-21.

AMERICAN SOCIETY OF CIVIL ENGINEERS, Texas section, spring meeting, Galveston, April 26-27.

ELECTIONS AND ACTIVITIES

W. TERRY FEILD, secretary-treasurer of the Arkansas Engineers Club for 13 yr. and vice-president for one term, has been elected president of the organization to succeed Roy E. Warden. The election took place at the 15th annual session, held last month at Little Rock. Feild is resident engineer inspector for the PWA at Booneville, Ark. Other officers are: R. C. Gibson, vice-president, and E. F. Nelson, secretary-treasurer, all of Little Rock.

N. E. LANT, bridge engineer of the Louisiana State Highway Commission, has been chosen president of the Louisiana section of the American Society of Civil Engineers to succeed A. J. Negrotto. Other new officers are: J. A. McNiven, first vice-president; Fred N. Billingsley, second vice-president, and V. J. Bedell, secretary-treasurer of the organization.

T. W. HAVELY of Lexington has been elected president of the Kentucky Association of Highway Contractors to succeed C. E. Gorman of Flemingsburg. New vice-presidents are: H. C. McNeill, Winchester, and Albert Snider, of Danville.

ARTHUR F. BUERKLE, surveyor of Tippecanoe County, Indiana, has been named temporary chairman of the Lafayette, Ind., chapter of the Indiana Society of Professional Engineers. G. P. Springer, civil engineering instructor at Purdue University, has been designated temporary secretary. The new chapter, which includes members in Clinton, Benton, Montgomery, Warren, Fountain, White and Tippecanoe counties, was organized last month.

THE MASTER BUILDERS' Association of Wisconsin meeting at Milwaukee recently re-elected John G. Jansen, of Milwaukee, president.

GEORGES COTE, Quebec City and director of surveying and boundary commissioner for the Province of Quebec, is the new president of the Canadian Institute of Surveying.

• • •

Engineering Conferences

ARIZONA HIGHWAY CONFERENCE, University of Arizona, Phoenix, Ariz., April 5-6.

ARKANSAS WATER AND SEWAGE CONFERENCE: University of Arkansas, Fayetteville, Apr. 15-17.

• • •

Short Courses

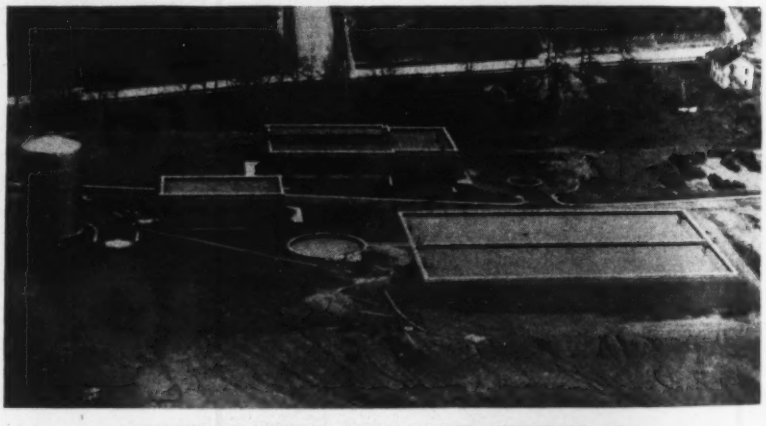
MONTANA SCHOOL FOR WATER WORKS OPERATORS, Miles City, April 3-4.

HIGHWAY: Sponsored by Texas A. & M. College and Texas highway department, College Station, Tex., Apr. 9–11.

• • •

Civil Service Examinations

U. S. GOVERNMENT: Senior inspector of engineering materials, $2600; and inspector of engineering materials, $2000. Application must be on file with the Civil Service Commission at Washington, D. C. by April 8.



NEW FILTER PLANT FOR BIRMINGHAM, ALA.

A NEW $350,000 filter plant has been placed in operation at Birmingham, Ala., by the Birmingham Water Works Co. to take water from the city's $6,000,000 industrial system and treat it for domestic consumption. The plant supplements the company's regular domestic supply from Lake Purdy via the Cahaba pumping station.

The filter building is of brick and concrete construction. There are two sedimentation basins each of 750,000 gal. capacity and six filters each 1,000,000 gal. per day capacity. The water leaving the filters is stored in an underground storage reservoir of one-half million gal. capacity.

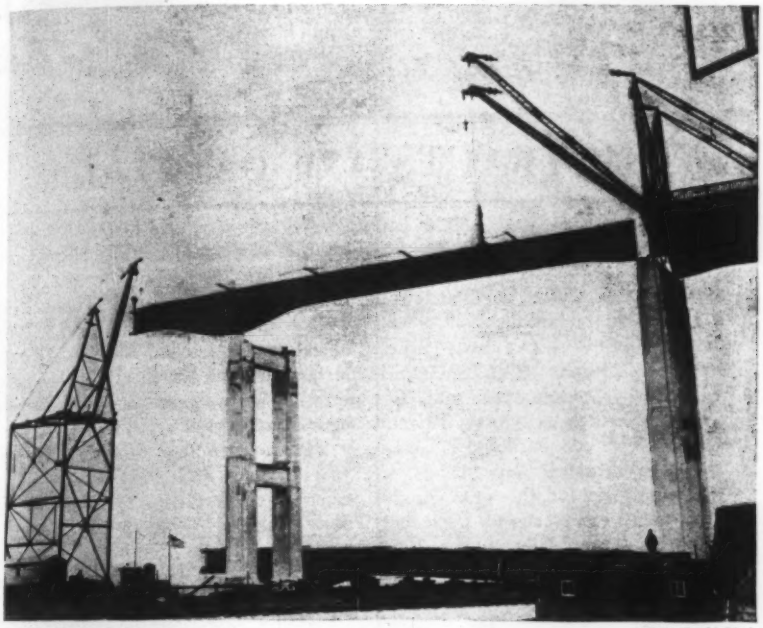
The plant, designed by the engineering department of the Birmingham Water Works Co., was built by Day & Sachs Construction Co., Birmingham. H. B. Richards is general manager of the water company; E. O. Sweet, resident engineer, and H. C. Denman, chief operator of the new plant. E. F. Meyer was construction engineer for the project.

Additional details of the industrial system can be found in *ENR*, April 22, 1937, p. 591.

BRIEF NEWS

A ROADSIDE PLANNING PROGRAM to cost more than $730,000 and to be carried out by the state department of highways is to be started soon in Pennsylvania. The program calls for work to prevent soil erosion and slides along the highways, along with landscape work around a number of new maintenance buildings.

A JUDGE in the federal court at Oklahoma City, Okla., Mar. 11 dismissed seven suits charging the Continental Oil Co. with pollution of subsoil water on Indian lands near Ponca City when the company agreed to pay $39,000 damages.



Wide World Photo

LARGEST GIRDER: 260 FT. LONG; 20½ FT. DEEP; 198 TONS

WHAT IS BELIEVED to be the largest girder to be erected in the United States—longest, deepest and heaviest—was lifted 135 ft. into place in the Thomas A. Edison Bridge over the Raritan River near Perth Amboy, N. J., on March 14. Spanning 200 ft. between piers the girder extends 60 ft. into the adjacent span. It is 20½ ft. deep over the piers, 12½ ft. at the center and weighs 198 tons. The traveler derrick, shown lifting 60 ft. from the land end of the girder, is of 125 tons capacity while the derrick on the barge tower is rated at 75 tons.

Because such a long girder is relatively very limber a special system of hog ties had to be used to brace the top flange during the erection operation. This system involved 5 outriggers (I beams about 22 ft. long) placed transversely at 52 ft. intervals along the flange, with 1 in. dia. cables stretched around the ends of the beams and attached to the ends of the girders. Cable x-bracing was also used in the rectangular truss panels.

Although this bracing system functioned perfectly on this first girder, when its companion girder was lifted a few hours later the top flange bent about 3 ft. out of line requiring the girder to be lowered to the barges, the flange straightened and the x-bracing adjusted and fastened to the girder at the intersections. A new attempt to lift it on March 18 was successful.

In addition to the 200-ft. span now in place, the bridge includes a 250-ft. span adjacent to it, which crosses the main shipping channel, and then eight more 200-ft. spans. Including the approach spans, the bridge contains 29 girder spans in its 4,388-ft. length. When completed it will provide two 24-ft. separated roadways for vehicular traffic. Designed by the New Jersey State Highway Department, Morris Goodkind, bridge engineer, and James Logan, state highway engineer, the bridge is being erected by the Bethlehem Steel Co. Ash-Howard-Needles & Tammen were consultants on the design. The piers were built by P. F. Connolly, Long Island City, N. Y., the south approach by the Fehlhaber Pile Co., New York, the north approach by J. F. Chapman & Sons, Hillside, N. Y. A PWA grant of $2,113,000 is aiding in financing the undertaking, which is to be completed in June at a cost of $4,670,000.

Landfill Disposal Approved by Experts

Hold New York City's landfill methods for sewage disposal create no hazard

New York City's landfill methods of refuse disposal constitute no hazard to health or safety in the opinion of a board of public health experts who made a preliminary report to the Bronx County supreme court on March 15. The board was named last June by Dr. Thomas Parran, Jr., Surgeon-General of the United States, as part of an agreement leading to the dismissal of grand jury indictments against Sanitation Commissioner William P. Carey and Health Commissioner John L. Rice (*ENR*, Apr. 19, 1939, p. 475 and June 29, p. 873). The indictment charged that landfill operations were a public nuisance.

Rats and mosquitoes eliminated

The board reported that it found no conditions at the five landfills under observation which would endanger the public health or safety now or in the future. "On the contrary," it states, "certain potential hazards obtaining previously at the sites of these fills have been diminished, for filling is one of the best methods of controlling rats and mosquitoes in marshes and swamps."

In a statement to *Engineering News-Record*, Commissioner Carey said:

"When we adopted our landfill system we canvassed the large cities of this and other countries in an effort to learn whether or not diseases or death were ever traceable to a refuse fill. The answer in every case was negative. Therefore, we had the utmost confidence that the findings of these eminent men who made up the board of investigation and who studied the situation for the past nine months, would be in our favor. Needless to say, we are highly pleased with the report."

Personnel of board

Members of the board are: Dr. M. J. Rosneau, School of Medicine, University of North Carolina; Dr. E. L. Bishop, director of health of the Tennessee Valley Authority; Dr. Huntington Williams, health commissioner of Baltimore; Dr. K. F. Maxcy, professor of epidemiology at Johns Hopkins University, and Ralph E. Tarbett, senior sanitary engineer of the U. S. Public Health Service.

Complete details of the New York landfill methods were published in *ENR*, Sept. 1, 1938, p. 270. The board's report will be published next week.

OBITUARY

VICTOR S. PERSONS, 61, president of the Persons Co., San Francisco, died in Sausalito, Calif., Mar. 5. Persons was educated at Ohio Western University and Armour Institute of Technology, receiving two civil engineering degrees from the latter school. His first engineering work was on the construction of a bridge across the Mississippi River at Thebes, Ill. In 1912 he was employed as engineer with the L. A. Norris Co., San Francisco; later by the J. G. White Engineering Corp., San Francisco, returning to the Norris firm in 1916. The Persons Co. was organized a few years later.

MAURICE M. WYCKOFF, 47, consulting engineer and attorney at law, died Mar. 8 in Brooklyn, N. Y. Following his graduation from Cornell University in 1912 with a civil engineering degree, Wyckoff worked as assistant engineer with the Alabama Power Co., Birmingham. In 1914 he joined the Interstate Commerce Commission as junior engineer, leaving there a year later to work with the T. A. Gillespie Co., Boston, Mass. In 1928 he became associated with Maxwell Wyckoff in the law firm of Wyckoff & Wyckoff, New York City, to specialize in legal matters pertaining to engineering.

JAMES N. BETHUNE, 67, for 35 years employed in the city engineer's office at Los Angeles, died Mar. 8 in that city. He retired last July, previous to that having been chief deputy in charge of the Van Nuys office to supervise all city surveying and engineering work in the San Fernando Valley.

F. J. FISCHER, 81, retired civil engineer who had been with the department of water and power of the city of Los Angeles for many years, died Mar. 9. Fischer had worked on the Owens River Aqueduct near Los Angeles with William Mulholland, as well as on many other important engineering projects in California.

C. E. LARSON, 60, building contractor of Fort Dodge, Ia., and head of the building concern bearing his name, died Mar. 13. Larson had been in the contracting business since 1911, erecting numerous schools, post offices, theatres, bridges and other structures in many Iowa cities.

H. CARL BACKUS, engineer in charge of state roads in Cayuga County, N. Y., died Mar. 10 in Auburn, N. Y. Backus had been with the state highway department since 1910, previous to that working as assistant county engineer under William Robinson of Syracuse, N. Y. Backus served with the engineering corps in France during the World War.

Other recent deaths include: GEORGE R. DAVEY, 75, builder of Tucson, Ariz.; HERMAN E. SCHUBERT, 72, retired civil engineer formerly employed by the Texas & Pacific R. R., El Paso, Tex.; RALPH ZIESEMER, former city engineer of Bisbee, Ariz., Long Beach, Calif.; J. B. BRITTON, highway contractor, Sumter, S. C.; J. GEORGE DIETERLE, 78, building contractor of Germantown, Pa., Germantown; PERCY E. BARBER, 82, civil engineer employed for many years by the St. Paul, Minn., water department and previous to that by the right-of-way department of the Northern Pacific Ry., Minneapolis; JOHN L. JACOBSON, 74, building contractor of Anaconda, Mont.; OTTO PETERSON, 77, founder of the Peterson Construction Co., Salina, Kan.; HARMON LAUGHLIN, 52, engineer with the Los Angeles water and power department; and GRANVILLE B. WICKS, 75, employed as civil engineer for many years with the water department of the city of Des Moines, Iowa.

CONTRACTS AND CAPITAL

ENGINEERING construction awards for the week total $52,202,000, 21 per cent above a week ago, but 10 per cent lower than in the corresponding 1939 week.

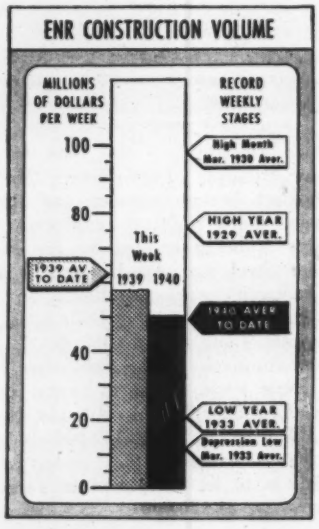
The current week's awards bring 1940 construction to $597,723,000, a level 19 per cent below the total for the 12-week period last year. Private construction for the period, $201,821,000, tops a year ago by 4 per cent.

Private awards for the week are 8 per cent above the preceding week, but 33 per cent lower than in the 1939 week. Public construction, however, tops a week ago by 27 per cent, and a year ago by 6 per cent.

In the classified construction groups, sewerage, bridges, industrial buildings, public buildings, earthwork and drainage, streets and roads, and unclassified construction exceed their respective volumes of a week ago. Bridges, commercial building and large-scale private housing, earthwork and drainage, and streets and roads top their totals for a year ago.

New capital for construction purposes for the week totals $9,898,000, 43 per cent below the total for the corresponding week last year. The current week's volume is made up of $7,173,000 in state and municipal bonds, $2,525,000 in USHA loans for rural housing projects in six communities, and $200,000 in corporate security issues.

New construction financing for the year to date, $226,645,000, is 54 per cent lower than the $496,074,000 reported for the 12-week period last year.



CONTRACTS

(Thousands of dollars)

	Week Ending Mar. 23 1939	Mar. 14 1940	Mar. 21 1940
Federal	$3,865	$2,537	$10,755
State & Municipal	30,262	26,023	25,579
Total public	$34,127	$28,560	$36,334
Total private	23,766	14,748	15,868
TOTALS	$57,893	$43,308	$52,202
Cumulative 1940 (12 weeks)			$597,723
1939 (12 weeks)			$742,058

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial building, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	1939 12 Wks.	Cumulative 1940 12 Wks.	1939
NON-FEDERAL	$222,574	$226,645	
Corp. securities	41,892	34,386	
State & Mun.	139,519	101,067	
R.E.A. loans	15,631	.....	
U.S.H.A. loans	25,474	90,547	
R.F.C. loans	58	645	
FEDERAL	$273,500	$	
TOTAL CAPITAL	$496,074	$226,645	

FHA MORTGAGES

	Week Ending Mar. 18 1939	Mar. 9 1940	Mar. 16 1940
Selected for appraisal	$25,907	$26,560	$26,747*
Cumulative 1940 (11 weeks)			$213,168*
1939 (11 weeks)			$229,320

* Subject to revision.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Mar., '40	238.29	114.55
Building Cost	Mar., '40	201.47	108.91
Volume	Jan., '40	196	86

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

UNDERPASS, MICHIGAN

OWNER: Michigan State Highway Department, Murray D. Van Wagoner, commissioner.

PROJECT: Highway underpass carrying Michigan Ave., under Michigan Central, New York Central and Grand Trunk Western Railroads; and bridge carrying Scotten Ave. over U. S. Route 112, Detroit, Mich. Structures of reinforced concrete and steel. Length 1,700 ft.; maximum depth of excavation 10 ft. in Michigan Ave.; maximum fill on Scotten Ave. 10 ft. high, length of fill 800 ft.

CONDITIONS: All materials to be furnished by contractor, and job must be finished by July 15, 1940. Rail and highway transportation available. Traffic must be maintained on Michigan Ave. Wage rates are: skilled, $1.50 to $1.62½ per hr.; semi-skilled, 85c.; and common, 77½c. per hr.

BIDS: Five bids were opened February 21, 1940, ranging from the contract low of $202,085 to $272,970.

LOW BIDDERS:

1. Bryant & Detwiler Co., Detroit, Mich..... $202,085
2. W. J. Storen Co., Detroit, Mich..... 221,683
3. Walbridge-Aldinger Co., Detroit, Mich..... 246,040

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Furn. timber piles, temp. trestle.	6,330 l. f.	$0.40	$0.26	$0.29
2. Drive piles, temp. trestle	5,922 l. f.	.50	.44	.45
3. Furn. struct. timber, trestle	94.9 M bm.	65.00	55.00	50.00
4. Erect. struct. timber	94.9 M bm.	40.00	55.00	50.00
5. Str. steel, temp. trestle	214,760 lb.	.04	.04	.06
6. Misc. hardware, trestle	10,250 lb.	.10	.10	.08
7. Unclass. excavation	2,450 c. y.	1.25	1.60	2.00
8. Gr. A. concrete, substr	1,683 c. y.	9.85	13.00	12.50
9. Cement	2,314 bbl.	1.60	1.90	2.25
10. Reinforcing steel	69,333 lb.	.04	.035	.04
11. Steel pipe railing	294 l. f.	2.50	2.50	3.50
12. Field painting — railing	L.S.	50.00	200.00	95.00
13. 16-oz. sheet copper	256 lb.	.50	.40	.60
14. Rubbed surface finish	2,070 s. f.	.12	.12	.14
15. 1-in. cork filler	280 s. f.	.60	.50	.61
16. Porous backfill	342 c. y.	.70	2.00	2.00
17. Dampproofing	8,893 s. f.	.045	.06	.06
18. Fndn. and service conn., NYC freight house	L.S.	900.00	700.00	1,100.00
19. Move freight house, NYC	L.S.	886.00	1,200.00	1,110.00
20. Underpinning GTW freight house	L.S.	200.00	800.00	500.00
21. 8-in. cast iron pipe	14 l. f.	2.25	2.35	2.25
22. 10-in. cast iron pipe	14 l. f.	3.00	3.00	3.00
23. 8-in. corr. met. pipe, perf	664 l. f.	1.00	1.00	1.10
24. 8-in. corr. met. pipe	52 l. f.	1.00	1.00	1.00
25. Remove masonry and concrete	557 c. y.	3.00	4.00	4.00
26. Remove old payment	3,231 s. y.	.40	.40	.06
27. Remove curb	192 l. f.	.15	.50	.15
28. Remove sidewalk	869 s. y.	.15	.22	.06
29. Earth excavation	19,717 c. y.	.65	.60	.70
30. Trim, finish earth grade	6.9 sta.	15.00	10.00	120.00
31. Gr. A conc., bellmouth reconst.	110 c. y.	48.00	30.00	21.00
32. Reinf. steel, bellmouth reconst.	12,075 lb.	.05	.035	.04
33. Sand-grav. fill, loose meas	3,996 c. y.	.70	1.00	2.00
34. 8-in. sewer	54 l. f.	.70	.90	.60
35. 10-in. sewer	88 l. f.	.80	1.00	.70
36. 12-in. sewer	210 l. f.	1.30	1.30	1.10
37. 15-in. sewer	94 l. f.	2.00	1.75	1.55
38. 10-in. cast iron pipe	38 l. f.	3.10	3.00	3.25
39. 12-in. cast iron pipe	126 l. f.	3.90	3.60	4.25
40. 10-in. encased sewer	42 l. f.	1.55	1.60	3.00
41. 12-in. encased sewer	114 l. f.	1.75	2.00	3.50
42. 18-in. encased sewer	104 l. f.	2.75	3.60	5.25
43. 6-in. sewer, open joints	170 l. f.	.56	.40	.30
44. 8-in. sewer, open joints	204 l. f.	.68	.90	.75
45. 12-in. sewer, open joints	82 l. f.	1.43	1.30	1.10
46. Manholes, type 1A	9 ea.	100.00	75.00	180.00
47. Catch basins, type 3B	7 ea.	90.00	70.00	110.00
48. Catch basins, type 3D	4 ea.	90.00	70.00	125.00
49. Catch basin traps	3 ea.	30.00	25.00	36.00
50. Inlets, type 5B	4 ea.	70.00	40.00	40.00
51. Inlets, type 6D	1 ea.	80.00	40.00	40.00
52. Inlets, type 9B	3 ea.	40.00	25.00	40.00
53. Inlets, type 9D	2 ea.	40.00	25.00	40.00
54. Spec. drop inlets, cover D	2 ea.	95.00	65.00	41.00
55. Covers, type A	1 ea.	15.00	15.00	20.00
56. Fine grading and cleanup	7.21 sta.	30.00	10.00	12.00
57. Aggr. base crse, comp. 8-in	3,761.6 s. y.	.78	.75	.75
58. Bitum. prime coat, T-3	1,253 gal.	.20	.15	.18
59. Bitum. surf. trtmt., mixt. 26-A	188 ton	7.00	5.00	4.10
60. Asphaltic binder	282 ton	6.00	4.00	7.50
61. Calcium chloride, applied	1.1 ton	36.00	40.00	50.50
62. Plank sidewalk	3,560 s. f.	.12	.10	.23
63. Truck guard	296 l. f.	1.00	1.00	1.10
64. Spec. conc. curb	110 l. f.	3.85	2.50	2.50
65. Replace pavement	100 s. y.	3.75	2.00	2.35
66. Aggr. approaches, loose meas	225 c. y.	1.35	2.25	2.75
67. 2-ft. conc. gutter	290 l. f.	.75	.50	2.50
68. Steel sheet piling, left in place	175 s. f.	.80	1.10	1.20
69. Unclassified excavation	963 c. y.	1.25	1.60	2.00
70. Gr. A. conc., substruct	654 c. y.	9.85	16.00	11.00
71. Gr. A conc., underpinning bldg.	89 c. y.	30.00	40.00	35.00
72. Cement	899 bbl.	1.60	1.90	2.25
73. Reinforcing steel	34,958 lb.	.04	.035	.04
74. Structural steel	1,430 lb.	.12	.15	.20
75. Bridge railing	29 l. f.	8.00	9.00	8.00
76. Field paint str. steel	L.S.	24.00	75.00	10.00
77. 16-oz. sheet copper	230 l. f.	.60	.40	.60
78. Rubbed surface finish	997 s. f.	.12	.12	.13
79. ¼-in. cork filler	71 s. f.	.50	.40	.50
80. ½-in. cork filler	22.5 s. f.	.60	.50	.65
81. 1-in. cork filler	55 s. f.	.75	.60	.75
82. Porous backfill	177 c. y.	.70	2.00	2.25
83. Dampproofing	3,455 s. f.	.045	.06	.06
84. 4-in. cast iron pipe	16 l. f.	2.00	1.60	1.25
85. 6-in. cast iron pipe	17 l. f.	2.00	2.00	2.00
86. 8-in. cast iron pipe	120 l. f.	2.50	2.35	2.50
87. 24-in. cast iron pipe	16 l. f.	9.00	12.00	10.50
88. 6-in. sewer, open joints	82 l. f.	.90	.40	.30
89. 8-in. sewer, open joints	190 l. f.	1.00	.90	.45
90. Remove masonry and concrete	250 c. y.	3.00	4.00	7.50
91. Remove old pavement	2,208 s. y.	.40	.40	.06
92. Remove sidewalk	245 s. y.	.15	.22	.06
93. Remove railway track	122 l. f.	1.00	1.00	2.50
94. Earth excavation	8,684 c. y.	.65	.60	.70
95. Sand-gravel fill	4,279 c. y.	.70	1.00	2.00
96. Trim, finish earth grade	10.5 sta.	15.00	10.00	117.50
97. Gr A conc., 9-ft. sew. rev	134 c. y.	48.00	50.00	30.00
98. Gr. A conc., diversion chamber.	58 c. y.	87.45	50.00	41.00
99. Reinforcing steel	17,096 lb.	.045	.035	.04
100. 6-in. cast iron pipe	10 l. f.	1.85	2.00	1.75
101. 12-in. cast iron pipe	10 l. f.	3.90	3.60	6.50
102. 18-in. cast iron pipe	3 l. f.	6.50	6.00	7.00
103. 24-in. cast iron pipe	14 l. f.	9.00	12.00	10.50
104. 6-in. sewer, open joints	334 l. f.	.56	.40	.30
105. 8-in. sewer	22 l. f.	.70	.90	.45
106. 12-in. sewer	202 l. f.	1.30	1.30	1.50
107. 12-in. encased sewer	168 l. f.	1.75	2.00	3.25
108. 15-in. encased sewer	116 l. f.	2.15	2.60	4.00
109. 18-in. encased sewer	50 l. f.	2.75	3.60	4.25
110. 18-in. encased sewer, c. i.	67 l. f.	17.50	8.00	9.25
111. 24-in. encased sewer	36 l. f.	4.50	5.20	6.00
112. 5-ft. cylindrical sewer	119.5 l. f.	35.00	30.00	32.00
113. 24-in. corr. met. pipe	32 l. f.	3.50	4.00	4.50
114. Manhole, type 1A	6 ea.	100.00	75.00	131.00
115. Special manhole, type X	1 ea.	100.00	100.00	160.00
116. Special mahole, type Y	1 ea.	720.00	450.00	1,050.00
117. Spec. drop manhole, cover A	1 ea.	175.00	200.00	278.00
118. 8-in. drop inlet	2 ea.	68.50	25.00	48.00
119. Inlet, type 9B	4 ea.	40.00	25.00	131.00
120. Catch basin, type 3B	5 ea.	90.00	70.00	107.00
121. Catch basin traps	4 ea.	30.00	25.00	36.00
122. 5-in. concrete sidewalk	105 s. f.	.20	.25	.29
123. Plank sidewalk	80 s. f.	.12	.10	.29
124. 4-ft. chain link fence	31 l. f.	2.25	1.30	1.80
125. Concr. pavement, 7-in. uniform	110 s. y.	1.90	2.00	1.90
126. Cable guard rail	100 l. f.	.70	.50	1.00
127. Foundations for signs	L.S.	335.50	350.00	295.00
128. Moving signs	L.S.	675.00	350.00	295.00
129. Furn. timber piles, temp. trestle	4,310 l. f.	.40	.26	.29
130. Drive timber piles, temp. trestle	4,082 l. f.	.50	.44	.40
131. Furn. struct. timber	54.4 M bm	65.00	55.00	50.00
132. Erect. struct. timber	54.5 M bm	40.00	55.00	50.00
133. Structural steel	102,000 lb.	.05	.05	.06
134. Miscellaneous hardware	7,200 lb.	.10	.10	.08
135. St. sheet piling, left in place	1,664 s. f.	.80	1.10	1.10
136. Unclassified excavation	3,076 c. y.	1.25	1.60	2.00
137. Grade A conc., substr	1,651 c. y.	9.85	13.00	9.00
138. Cement	2,270 bbl.	1.60	1.90	2.25
139. Reinforcing steel	81,260 lb.	.04	.035	.04
140. Steel pipe railing	73.5 l. f.	2.50	2.50	4.25
141. Field painting, railing	L.S.	13.00	60.00	16.00
142. 16-oz. sheet copper	346 lb.	.60	.40	.60
143. Rubbed surface finish	2,516 s. f.	.10	.12	.15
144. 1-in. cork filler	224 s. f.	.75	.60	.75
145. Porous backfill	314 c. y.	.70	2.00	2.00
146. Dampproofing	8,119 s. f.	.045	.06	.06
147. 8-in. corr. met. pipe, perf	338 l. f.	1.00	1.00	1.10
148. 8-in. cast iron pipe	47 l. f.	2.25	2.35	2.25
149. 8-in. sewer, open joints	310 l. f.	.95	.90	.40
150. Covers, type A	2 ea.	18.00	15.00	20.00
151. 4- ft. chain link fence	311 l. f.	1.50	1.30	2.00
152. Remove masonry and conc	1,530 c. y.	3.00	4.00	7.50
153. Remove old pavement	385 s. y.	.40	.40	.06
154. Remove sidewalk	122 s. y.	.15	.22	.06
155. Remove fence	13.4 rods	.60	2.50	12.00
156. Earth excavation	14,188 c. y.	.65	.60	.70
157. Trim, finish earth grade	7.94 sta.	15.00	10.00	118.00
158. Sand-gravel fill	2,530 c. y.	.70	1.00	2.00
159. 8-in. sewer	22 l. f.	.80	.90	1.00
160. 12-in. sewer	18 l. f.	1.30	1.30	1.00
161. 15-in. sewer	54 l. f.	2.00	1.75	2.00
162. 12-in. encased sewer	341 l. f.	1.75	2.00	3.50
163. 6-in. sewer, open joints	510 l. f.	.56	.40	.45
164. 8-in. sewer, open joints	217 l. f.	.68	.90	1.00
165. Manholes, type 1A	5 ea.	100.00	75.00	131.00
166. Catch basins, type 3B	3 ea.	90.00	70.00	125.00
167. Catch basin traps	3 ea.	30.00	25.00	36.00
168. Inlets, type 9B	3 ea.	40.00	25.00	38.00
169. Conc. pavement, 7-in. uniform.	5 s. y.	1.90	2.00	2.00
170. Plank sidewalk	100 s. f.	.12	.10	.25

CONSTRUCTION REPORTS

Compiled by BUSINESS NEWS DEPARTMENT
Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, MANAGER
SCOTT McLEOD, STATISTICIAN
(Daily service also available—Write for details)

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

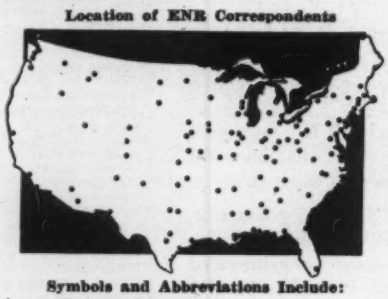
Classes of Construction
(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Materials, Equipment
Bridges, Grade Cross'gs	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads);
BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);
LOW BIDDERS ($500,000 projects and over);
CONTRACTS AWARDED

Location of ENR Correspondents



Symbols and Abbreviations Include:

✦ Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD McGraw-Hill Construction Daily

WATER SUPPLY

PROPOSED WORK

Conn., Southington—Southington Water Dpt., Center St., making tests to establish auxiliary water supply, High St. $15,000.

Ga., Covington—WW imprvs. Engineer not appointed.

Ind., Jonesboro—J. E. McKeever, town clk., bids soon WW, one 300 GPM centrifugal motor driven pump, 25 hp. auxiliary engine, c.i. pipe, valves and boxes, check valve, chlorinator, pumphouses. $25,000. V. R. Dicken, Courthouse, Marion, consult. engr.

N. Y., Batavia—Common Council, City Hall, imprv. filtration plant. Over $15,000. O. A. West, city engr.

N. Y., Bergen—Water softening equip. for local water sys. $20,000. B. L. Cooley, mayor.

N. Y., Rensselaer — Rensselaer Water Co., Bway., C. Claflin, supt. in charge, applied for RFC loan to finance water supply sys. construction. Over $100,000.

N. C., Coats—$38,000 bond election Apr. 2, water sys. $90,000. CD 1/11—ENR 1/18.

N. C., Fuquay Springs—$12,500 bond election Apr. 2, water and sewer line extens. Over $30,000. WPA. R. Glenn Johnson, town mgr. CD 2/16—ENR 2/22.

N. D., Kulm—E. Hieb, city aud., WW sys. $100,000. Authorized $35,000 bond issue, WPA.

O., Georgetown—New pure water storage sys. with underground wells, basins, about 450,000 gal. water storage capacity. $40,000. Burgess & Niple, 568 E. Broad St., Columbus, engrs. CD 8/16—ENR 8/24.

O., Somerset—$25,000 bond election May 14, reservoir. Over $25,000. Burgess & Niple, 568 E. Broad St., Columbus, engrs. CD 11/15—ENR 11/23.

★**O., Springfield**—Exten. Buck Creek Valley water supply field, constructing reservoirs and water purification plant. $1,100,000. W. E. Lucas, city engr. CD 4/11—ENR 4/13.

Okla., Clinton—New water lines, wells, pump. equip. for Western Oklahoma Tuberculosis Hospital. $42,426. C. A. Stoldt, 1112 N.W. 43 St., Oklahoma City, engr.

Ore., Eastside—100,000 gal. reservoir and laying distributing watermains, etc. D. L. Buckingham, Marshfield, engr.

Pa., Mifflin Twp. (Irwin P. O.)—Bd. Supervs. Mifflin Twp, F. Horn, twp. secy., Irwin P. O., exten. c.i. watermains throughout twp. $100,000.

★**Pa., Phila.** — Reconstructing water sys. $18,000,000. Taxpayers to vote on project Apr. 23. Morris Knowles, Inc. (N. R. Jacobs ch. engr. in charge of surveys), Westinghouse Bldg., Pittsburgh, engrs. CD 3/12—ENR 3/14.

✦**S. D., Interior**—National Park Service, Interior Bldg., 19 and C Sts. N.W., Wash., D. C., $22,000 allot. approved for purchase material for water pipe line from White River at Interior to reservoir for water supply for Bad Lands National Monument Park.

Tex., Gilmer—H. B. Davis, mayor, watermain exten., sewage treatment plant, etc. $46,000. Applied for WPA funds. Freese & Nichols, Capps Bldg., Fort Worth, engrs. CD 3/8—ENR 3/14.

Tex., Houston—O. Holcomb, mayor, completed plans, will take competitive bids WW exten., 8 in. mains in Enkleke St., fire hydrants, c.i. mains, valves, copper services. $15,000. J. M. Nagle, dir. P. Wks. G. L. Fugate, WW engr.

Tex., Malakoff—Henderson Co. Water Control & Imprvt. Dist., c/o H. Ferguson, engr., P. O. Box 484, WW sys., elevated tank, tower, deep well, distr. sys., fire hydrants, meters, pumps, etc. $50,000. Freese & Nichols, 407 Capps Bldg., Fort Worth, consult. engrs. CD 9/25—ENR 9/28.

Tex., Trinidad—Henderson Co., Water Control & Imprvt. Dist. 2, c/o H. Ferguson, engr., P. O. Box 484, Malakoff, WW and sewerage sys., wells, tank, tower, dist. sys., fire hydrants, meters, disposal plant, etc. $60,000

Wash., Steilacoom — State Dpt. Finance, Budget & Business, Olympia, bids soon, 300,000 gal. steel plate standpipe, 40 ft. diam., 45 ft. high, with 100 ft. 8- to 12-in. pipe, for Western State Hospital. Over $5,000.

Wash., Toppenish—Drilling new well and exten. watermains. P. D. Wilson, water supt.

Ont., Sault Ste. Marie—Replacing wooden main with 18 in. steel force main, Wallace Terrace. $25,000. E. E. Smith, City Hall, engr.

Que., Dolbeau—Pump house. $25,000. R. Morin, 511 Poplar St., engr.

BIDS ASKED

Bids Asked March 27

Ark., Magnolia—Exten. watermains. Dickinson & White, 910 Rector Bldg., Little Rock, engrs. CD 8/16—ENR 8/24.

Bids Asked April 1

Sask., Rosetown — W. Mullen, municipality clk., 13,240 ft. c.i. 6 in. watermain, water tower, etc. $15,000. Underwood & McLellan, 502 Grain Bldg., Saskatoon, engrs. CD 2/7—ENR 2/15.

Bids Asked April 3

Neb., Grand Island—F. S. White, city clk., concrete reservoir and pipe line for water supply. $240,000. Black & Veatch, 4706 Bway., Kansas City, Mo., engrs. CD 2/19—ENR 2/22.

Bids Asked

Fla., West Palm Beach—West Palm Beach Housing Auth., 60,000 gal. steel elevated water storage tank.

CONTRACTS AWARDED

Ark., State Sanatorium (Booneville)—Arkansas Tuberculosis Sanatorium, J. D. Riley, supt., 5,000 ft. additional water supply lines, own forces. **$15,000.** CD 2/29—ENR 3/7.

Conn., New Britain—P. Wks. Dpt., City Hall, watermains from Shuttle Meadows Reservoir to W. Main St. and to Corbin Ave. Owner builds. **$84,500. WPA.** G. Molleur, City Hall, engr. CD 1/3/39—ENR 1/5/39.

La., Plaquemine—Drainage and watermain imprvs., **WPA. $82,357.**

Md., Baltimore—Bd. Awards, City Hall, furnishing, del. valves to Bur. Water Supply, to M. and H. Valve & Fitting Co., Anniston, Ala., **$23,557.** Bids 3/6. CD 2/28.

Mass., Belmont (br. Boston) — Bd. Selectmen, Town Hall, water sys. exten., pipe lines, own forces. **$43,500.** Est. $45,000.

Mass., Franklin—Town Water Dpt., Town Hall, exten. c.i. water distr. sys., day labor. **$25,000.** Funds voted.

Mass., Milton (br. Boston)—Town, Bd. Selectmen, Town Hall, watermain extens., day labor. **$25,620** appropriated.

Mass., Natick—Bd. Selectmen, Town Hall, exten. c.i. water distr. sys., **WPA. $43,500.**

Mass., Somerville—C.I. watermain exten., **WPA. $75,000.** T. Hegarty, city engr.

Mass., Winchester — Bd. Selectmen, Mabel Stinson, town clk., Town Hall, water sys. and maintenance, day labor. **$33,390.**

N. Y., Binghamton—Water distr. sys., c.i. mains, reservoir and pressume pump, Ely Park. **WPA** under supervision J. A. Giles, city engr., and J. M. Conley, Dist. WPA dir. **$32,685.**

N. Y., Lewiston—30,288 lin. ft. c.i. mains, valves, meter pits, etc. **WPA. $100,000.** C. W. Post, Old P. O. Bldg., Albany, ch. engr. in charge of WPA projects.

N. Y., Lockport—A. Van de Mark, mayor, City Hall, 2 mi. c.i. watermains, valves, hydrants, **WPA. $75,000.** C. W. Post, Old P. O. Bldg., Albany, ch. engr. for WPA projects.

Tex., Griffing Park (near Port Arthur)—H. G. Johnson, mayor, 100,000 gal. steel tank and 100 ft. steel tower, to Pittsburgh-Des Moines Steel Corp., Praetorian Bldg., Dallas. **$16,840.** Bids 3/1. CD 1/19—ENR 1/25.

✦**Tex., Texarkana**—Pub. Bldgs. Administration, Wash., D. C., 300,000 gal. steel water tank and tower, at Federal Correctional Institution, to Chicago Bridge & Iron Wks., Praetorian Bldg., Dallas. **$15,940.**

Que., Malaltic—Exten. and imprv. water sys., erecting dam across River Malaltic, day labor. **$40,000.**

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Conn., Darien—Water & Sewerage Comm., Town Hall, J. C. Molinar, chn. Incinerator Com., preliminary survey to determine type, possible sites for incinerator, and to decide whether an engineer will be needed. $60,000.

Conn., New Britain—P. Wks. Dpt., storm and sanitary sewers, S. Mountain Dr. $29,800, storm sewers Myrtle St. $21,400, also removal sanitary sewer. G. Molleur, city engr.

Fla., Fort Lauderdale—L. E. Moore, mayor, sanitary sewerage sys. Over $50,000. Applied for WPA gr.

Fla., Pahokee—A. Dulany, mayor in charge, imprv. drainage sys. Over $50,000.

Ind., Bluffton—Bd. P. Wks., F. Buckner, chn., City Hall, intercepting and lateral storm sewer. $67,700. H. Gottschalk, 617 Clinton St., Fort Wayne, consult. engr. CD 1/10—ENR 1/18.

Ia., Emerson—Sewerage sys. $57,800 Application made to WPA. CD 3/6—ENR 3/14.

Mass., Milton (br. Boston)—Sewer Dpt., Town Hall, Canton Ave., bids in April, sanitary sewers. $29,500 appropriated.

N. Y., Albany—Approx. 4,000 ft. 36- to 54-in. rein.-con. trunk sewer, 17 Ward. $90,000. J. J. McManus, city engr.

N. Y., Yonkers—R. J. Whitney, city mgr. in charge, installing bin, crane, new burners in city incinerator. $180,000.

O., Bellefontaine—Bd. Comrs., Logan Co., 2.89 mi. sanitary sewer laterals on Orchard Island at Indian Lake. $75,000. Application to be made for WPA. C. A. Inskeep, co. engr.

Okla., Durant — Preliminary plans made, sanitary sewerage extens., College Heights addn. $39,340. R. A. Drain, Durant, engr.

Pa., Curwensville—Boro, imprv., exten. sanitary sewage facilities. Over $25,000. J. H. Arnold, solicitor. Engineer not appointed.

Tex., Houston—O. F. Holcombe, mayor, storm sewers from Griggs Rd. to MacGregor Dr. $25,000. J. M. Nagle, dir. P. Wks.

Tex., New Boston—H. Miller, city secy., sanitary sewerage sys. and disposal plant. $90,000. A. C. Moore & Co., 2404 Smith-Young Tower, San Antonio, engrs. Application filed with WPA. CD 1/18—ENR 1/25.

BIDS ASKED

Bids Asked March 25

Conn., Hartford—Metropolitan Dist., Bd. Contr. & Supply, Municipal Bldg., 550 Main St., 8,600 ft. tile sewers, Windsor Highlands Sect., Windsor. $25,000. R. J. Ross, 550 Main St., engr.

Bids Asked March 26

Ind., Fort Wayne—Bd. P. Wks., R. G. Beams, chn., City Hall, sewage treatment plant, interceptor sewers, Div. A, Contr. 28, Spring St. Sect., Nehaska Interceptor. PWA. Charles Cole, 1030 W. Wayne St., Fort Wayne, consult. engr.